CLAIMS

What is claimed is:

1. A charging tool for charging a lapping plate with an abrasive when a slurry containing the abrasive is introduced between the charging tool and the lapping plate, the charging tool comprising:

a fixture having a plate-like shape and a rotational axis;

a plurality of discrete, discontinuous charging elements mounted to the fixture, the charging elements being symmetrically spaced-apart from each other about the rotational axis of the fixture, and being formed from a high density ceramic; and

each of the charging elements having a generally round facing surface for applying pressure to and embedding the abrasive into the lapping plate.

2. The charging tool of claim 1, wherein the fixture is rotated in a direction that is opposite to a rotational direction of the lapping plate.

3. The charging tool of claim 1, wherein each of the charging elements is cylindrical in shape.

4. The charging tool of claim 1, wherein the fixture is formed from stainless steel.

5. A system for charging a lapping plate, comprising:

a lapping plate;

a charging tool having a fixture with a plurality of discrete charging elements mounted thereto;

a slurry containing an abrasive; and

the fixture is rotated in one direction and the lapping plate is rotated in an opposite direction to charge the lapping plate with the abrasive by embedding the abrasive into the lapping plate when the slurry is introduced between the fixture and the lapping plate.

6. The system of claim 5, wherein each of the charging elements is cylindrical in shape.

7. The system of claim 5, wherein the charging elements are formed from a high density ceramic.

8. The system of claim 5, wherein the charging elements symmetrically spaced apart from each other about a rotational axis of the fixture.

9. The system of claim 5, wherein the fixture is formed from stainless steel.

10. The system of claim 5, wherein a pressure between the fixture and the lapping plate is in a range of approximately 10 to 30 psi.

11. The system of claim 5, wherein the fixture is rotated clockwise and the lapping plate is rotated counter-clockwise.

12. The system of claim 5, wherein the lapping plate is completely charged in approximately 30 to 45 minutes.

13. The system of claim 5, wherein the slurry is scraped off the lapping plate at a rate of approximately 5 ml/min.

14. A method of charging a lapping plate, comprising:

(a) providing a lapping plate and a charging tool having a fixture with a plurality of charging elements;

(b) introducing a slurry containing an abrasive between the lapping plate and the charging elements;

(c) rotating the fixture in one direction and the lapping plate in an opposite direction;

(d) charging the lapping plate with the abrasive by embedding the abrasive into the lapping plate with the charging elements.

15. The method of claim 14, further comprising forming the charging elements in a cylindrical shape.

16. The method of claim 14, further comprising forming the charging elements from a high density ceramic.

17. The method of claim 14, further comprising symmetrically spacing the charging elements on the fixture about a rotational axis of the fixture.

18. The method of claim 14, further comprising forming the fixture from stainless steel.

19. The method of claim 14, wherein step (c) comprises rotating the fixture in a clockwise direction and rotating the lapping plate in a counter-clockwise direction.

20. The method of claim 14, further comprising applying a pressure between the charging elements and the lapping plate in a range of approximately 10 to 30 psi.

21. The method of claim 14, further comprising completely charging the lapping plate in approximately 30 to 45 minutes.

22. The method of claim 14, further comprising scraping the slurry off of the lapping plate at a rate of approximately 5 ml/min.